TEST RAPORLARI

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Test Report issued under the responsibility of:

IMQ S.p.A.•www.imq.it
I•20138 MI•via Quintiliano 43

TEST REPORT
IEC 61058-2-1
Switches for appliances
Part 2-1: Particular requirements for cord switches

Report Number. .....:	**MI17-0015103-01**
Date of issue .....:	**11/10/2018**
Total number of pages.....	**40 (Test Report) + 3 (Annex 1)**
Name of Testing Laboratory preparing the Report.....:	**IMQ S.p.A. – Milano I – 20138 Via Quintiliano 43 Milano (MI)**
Applicant's name.....:	**Elit Gőzetme Denetim Enerji Mùhendislik Hizmetieri San. Ve diş Tic. Ltd. Şti.**
Address .....:	**Site Mah. Atay Cad. N° 43A/2 TR-34760 Ùmaraniye Istambul**
Test specification:	
Standard .....:	IEC 61058-2-1:2010 (see also IEC 61058-1:2000, AMD1:2001, AMD2:2007)
Test procedure.....:	CB Scheme
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC61058_2_1C
Test Report Form(s) Originator.....:	IMQ S.p.A.
Master TRF .....:	Dated 2017-09-01

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description .....:	Non-rewirable cord switches
Trade Mark .....:	Őrgün Aydinlatma
Manufacturer.....:	Őrgün Aydinlatma Sanayi ve ticaret Ltd. Şti. Bostanci Yolu Mevdudi Sk. N° 46 (İMES E Kapisi Karşisi) Ümaraniye Istambul TÜRKİYE
Model/Type reference.....:	A2300
Ratings.....:	2 - ⊗1 A / 250V~

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):

☒	**CB Testing Laboratory:**	IMQ S.p.A. – Milano	
Testing location/ address ..... :		I – 20138 Via Quintiliano 43 Milano (MI)	
Tested by (name, function, signature) ..... :		Mascheroni V.	
Approved by (name, function, signature) .. :		Primicerio A.	Signed by: Primicerio Alessandro Date & Time: 2018-10-10 2.07 PM
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address ..... :			
Tested by (name + signature)..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 3:**		
☐	**Testing procedure: CTF Stage 4:**		
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			
Supervised by (name, function, signature) :			

List of Attachments (including a total number of pages in each attachment):

This Test Report consist of:

Test report based on IEC 61058-2-1:2010 : 40 pages
Annex 1 - Photographic documentation : 3 pages

The following clause have been cancelled from this report as not applicable on the device under test :

10, 11.1, 14.2, 16.3.3, 19.2, 23, 24, 25, Table 14, Table 15, Table 16, Table 18, Table 20, Table 21, Table 25,

Summary of testing:

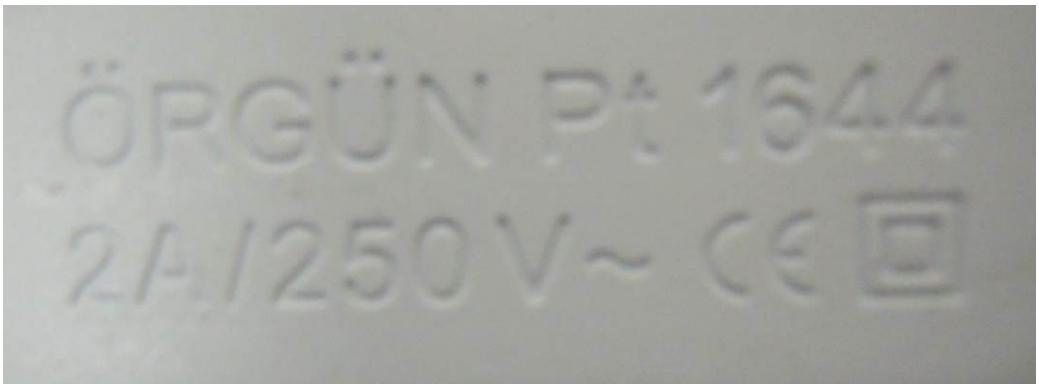
Tests performed (name of test and test clause):	**Testing location:**
Complete tests	IMQ S.p.A. – Milano I – 20138 Via Quintiliano 43 Milano (MI)

Summary of compliance with National Differences (List of countries addressed): -

☐ **The product fulfils the requirements of _____ (insert standard number and edition and delete the text in parenthesis, leave it blank or delete the whole sentence, if not applicable)**

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



Test item particulars.....:	
Type reference .....:	☒ unique (U.T.) ☐ common (C.T.)
Method of actuating.....:	☐ rotary ☐ lever ☒ rocker ☐ push-button ☐ push-pull ☐ push-push ☐ cord-operated ☐ other:
Type of circuit.....:	☒ 1.2 ☐ 2.2 [1.2] ☐ 3.2 ☐ 4.2 ☐ 1.3 ☐ 2.3 ☐ 3.3 ☐ 4.3 ☐ 1.4 [1.2] ☐ 2.4 [1.3] ☐ 3.4 ☐ 4.4 ☐ 1.5 [1.2] [1.4] ☐ 2.5 ☐ 3.5 ☐ 4.5 ☐ 1.6 ☐ 2.6 ☐ 3.6 ☐ 1.6 ☐ 1.7 ☐ 2.7 ☐ 3.7 [3.3] ☐ 1.8 ☐ 2.8 ☐ 3.8 ☐ Special ☐ 2.9 ☐ 3.9 [3.3]
Table 15 – Electrical endurance tests for the different types of electronic switches with or without electrical contact(s)	☐ SSD without electrical contact(s) ☐ SSD with serial contact(s) ☐ SSD with parallel contact(s) ☐ SSD with serial and parallel contact(s)
Connection to the switch: .....:	☐ rewirable ☒ non rewirable
Disconnection.....:	☐ electronic ☐ micro ☒ full ☐ all-pole
Type of load.....:	☒ Substantially resistive ☐ Resistive and/or motor ☐ Circuit for specific load of motor with a locked rotor ☐ Circuit for an inductive load ☐ Resistive and capacitive ☒ Tungsten filament lamp load ☐ Circuit for specific lamp load ☐ Specific declared
Means of suspension.....:	☐ with means ☒ without means
Number of cycles.....:	1E4
Ambient temp., actuating member °C)..:	0÷55 °C
Ambient temperature, other parts (°C)..:	0÷55 °C
For appliance class.....:	II
IP number.....:	IP40
PTI (V).....:	175V
Rated Impulse Voltage U_{imp} (V).....:	2,5kV
Material group.....:	☐ I ☐ II ☒ IIIa ☐ IIIb
Pollution degree.....:	☐ 1 ☒ 2 ☐ 3
Type of terminals.....:	Crimped connection
Type of flexible cable.....:	☐ round ☒ flat ☐ rond / flat
Cross-sectional area (mm²).....:	0,5mm²

Possible test case verdicts:

- test case does not apply to the test object.....: N/A
- test object does meet the requirement.....: P (Pass)
- test object does not meet the requirement.....: F (Fail)

Testing .....:

Date of receipt of test item .....: 03/08/2017 (sample sent by the applicant)
BEM 87617 + BEM 90664

Date (s) of performance of tests .....: 03/08/2017 to 11/10/2018

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

Unless otherwise stated the uncertainties for the tests and measurements are evaluated in according to IMQ Operational Instruction IO-LAB-001 and IO-LAB-004.
The uncertainties evaluation has been carried out in accordance with IEC Guide 115 "Application of Uncertainty of measurement's to Conformity Assessment Activity in the Electrotechnical Sector" and IECEE OD-5014. Internal Procedure PG-037 ensures that the requirements for traceability of calibrations, of all test equipment requiring calibration, and calibration intervals are met. The ability of reliability of this product to perform its intended function in a particular application has not been investigated. Unless otherwise specified, warnings, installation instructor and/or user manual provided with the sample have been checked in Italian or English version only.

Throughout the report the indication "N/C" is used to indicate that the test case applies to the test object but it as not been carried out do to the observed non–compliance.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:

☐ Yes
☒ Not applicable

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies):

Őrgün Aydinlatma Sanayi ve ticaret Ltd. Şti.
Bostanci Yolu Mevdudi Sk. N° 46 (İMES E Kapisi Karşisi) Ümaraniye Istambul TÜRKİYE

General product information:

TABLE 1

Type Reference	Cat. reference	Description
A2300	A2300	Non-rewirable cord switches

The non rewirable cord switches may be provided with the following cable:

H03VVH2-F 2x0, 05 mm² - trade mark UNAL KABOL – VDE

IEC 61058-2-1			
Clause	Requirement + Test	Result - Remark	Verdict

8	**MARKING AND DOCUMENTATION**		
8.1	The switch manufacturer provide adequate information to ensure that:		
	- appliance manufacturer can select and install a switch;		P
	- end user can use a switch as intended by the switch manufacturer;		P
	- corresponding tests performed in accordance with this standard.		P
8.1.1	Information is provided in one or more of the following ways, as detailed in table 3. By Marking (Ma)		
	Information provided by marking on the switch itself.		P
8.1.2	By Documentation (Do)		
	Information provided by separate documentation, which may consist of a leaflet, a specification sheet, or a drawing, etc.		P
	Documentation made available to the appliance manufacturer or end user in any suitable format.		P

Table 3	***Switch information***					
No.	Characteristic	Sub-clause	Way of information ☐C.T.☐ U.T.			

1	**SWITCH IDENTIFICATION**							
1.1	Manufacturer's name or trade mark		Ma	Ma	Őrgùn			P
1.2	Type reference		Ma	Ma	Pt1644			Fail
2	**SWITCH ENVIRONMENT / MOUNTING**							
2.1	Degree of protection provided for the switch when mounted according to documentation	7.1.5	Do	Do	IP		code of IEC 60529	P
2.2	Degree of protection against electric shock, from outside of an appliance	7.1.5.3	Do	Do	☐ Class 0 ☐ Class I		☒ Class II ☐ Class III	P
2.3	Method of:							
	- mounting and actuating the switch	7.1.7 and	Do	Do				P
	- providing earthing if appropriate	7.1.7.7	Do	Do				N/A
	Intended method(s) of mounting and the intended orientation(s) declared.		Do	Do				N/A
2.4	Pollution degree	7.1.6	Do	Do	☐ 1	☒ 2	☐ 3	P

IEC 61058-2-1			
Clause	Requirement + Test	Result - Remark	Verdict

3	**TEMPERATURE**						
3.1	Ambient temperature limits if ≠ from 0 °C to 55 °C ..... :	7.1.3	Ma	Do	55	°C	P
3.2	Ambient air temperature for						
	- electronic switches .....:	7.1.3.4.1	Ma	Do		°C	N/A
	- cord and independently mounted switches if ≠ 0 °C to 35 °C .....:	or 7.1.3.4.2	Ma	Do		°C	N/A
	- other switches, if ≠ 0 °C to 55 °C.....:	7.1.3.2 or 7.1.3.3	Ma	Do		°C	N/A
4	**ELECTRICAL LOAD / CONNECTION**						
4.1	Rated voltage or voltage range ..... :	6.1	Ma	Do	250	V	P
4.2	Nature of supply if the switch is not intended for both a.c. and d.c. or if the rating is different for a.c and d.c.	7.1.1	Ma	Do		~	P
4.3	Frequency or frequency range if ≠ 50 Hz or 50 – 60 Hz..... :		Ma	Do	50/60	Hz	P
4.4	Circuits of substantially resistive loads						
	- rated current of the rated load ..... :	7.1.2.1	Ma	Do	2	A	P
4.5	Circuits for resistive and motor load with a power factor ≥ 0.6						
	- rated current..... :	7.1.2.2	Ma/ Do	Do		☐ A ☐ W	N/A
	- and for electronic switches the minimum current (or power)..... :		Ma/ Do	Do		☐ A ☐ W	N/A
4.6	Circuits for resistive and capacitive load						
	- rated current and rated peak surge current ..... :	7.1.2.3	Ma/ Do	Do		☐ A ☐ W	N/A
	- and for electronic switches the minimum current (or power)..... :		Ma/ Do	Do		☐ A ☐ W	N/A
4.7	Circuits for tungsten filament lamp load						
	- rated current..... :	7.1.2.4	Ma/ Do	Do	⊗ 1 A	☒ A ☐ W	P
	- and for electronic switches the minimum current (or power)..... :		Ma/ Do	Do		☐ A ☐ W	N/A
4.8	Circuits for declared specific loads						
	- details of the appliance to be controlled, or other specific load	7.1.2.5		Do			N/A
4.9	Switches for more than one circuit						
	- the current to each circuit and to each terminal..... :		Ma / Do	Do		A	N/A

IEC 61058-2-1							
Clause	Requirement + Test				Result - Remark		Verdict
	If different from each other, it is made clear to which circuit or which terminal the information applies		Ma / Do	Do			N/A
4.10	Rated impulse withstand voltage..... :	7.1.10	Do	Do	2,5	kV	P
	For electronic switches. Items 4.11 – 4.13 below						
4.11	Thermal current Ith :	8.4.101	Ma	Do		A	N/A
4.12	Duty-type	7.1.16	Do	Do			N/A
4.13	ON/OFF-time for duty-type		Do	Do			N/A
4.14	Type and/or connection of switch	7.1.13	Do	Do			N/A
4.15	Circuits for specific lamp load						
	- rated current and inrush current ..... :	7.1.2.7	Do	Do		A	N/A
4.16	Circuits for an inductive load with a power factor ≥ 0.6						
	- rated current :	7.1.2.8	Do	Do		A	N/A
4.17	Circuits for specific load of motor with a locked rotor and with a power factor ≥ 0.6						
	- rated current :	7.1.2.9	Do	Do		A	N/A
5	**TERMINALS / CONDUCTORS**						
5.1	All terminals suitably identified, or their purpose self-evident, or the switch circuitry visually apparent		Ma	Ma			P
	Terminals intended for connection of supply conductors, the identification may take the form of:						
	- a letter L		Ma	Ma			N/A
	- a number		Ma	Ma			N/A
	- or of an arrow		Ma	Ma			N/A
5.2	Terminals for earthing marked with the protective earth symbol		Ma	Ma			N/A
5.3	Information for terminal if this needs prepared conductors or use of special purpose tool	7.2	Do	Do			N/A
5.4	Method of connection and disconnection for screw less terminals		Do	Do			N/A
5.5	Type of conductor to be connected to the terminal	7.2.6 ÷ 7.2.9	Do	Do	For flexible conductors (see general product information)		P
5.6	Suitability for interconnection of two or more conductors to terminals	7.2.5	Do	Do			N/A
5.7	Type of solder terminal for:						
	- hand with soldering iron	7.2.10	Do	Do			N/A

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Clause	Requirement + Test				Result - Remark		Verdict
	- solder bath	7.2.11	Do	Do			N/A
	- securing the conductor by mechanical means and by soldering	7.2.12	Do	Do			N/A
	- type 1	7.2.13	Do	Do			N/A
	- type 2	7.2.14	Do	Do			N/A
	Suitability for connection of supply conductors to terminals:						
5.8	- unprepared	7.2.3	Do	Do			N/A
5.9	- prepared	7.2.4	Do	Do			N/A
5.10	Tabs with dimension other than those according to IEC 61210	11.2.5.1	Do	Do			N/A
	- appropriate female connector (*size, material etc.*)						N/A
5.101	Non–rewirable switch	7.1.101.2	Do	Do			P
5.102	Switch suitable only for use with flat cords	7.1.103.2	Do	Do			P
6	**OPERATING CYCLES / SEQUENCE**						
6.1	Number of operating cycles	7.1.4	Ma	Do	1E4		P
6.2	Operating sequence for switches with more than one circuit		Do	Do			N/A
6.3	Forces applied to end stops or full travel of actuating member	17.2.3.4	Do	Do			N/A
7	**SIGNAL INDICATORS**						
7.1	Maximum power of tungsten filament signal lamps..... :		Ma	Ma		W	N/A
	Marking visible when replacing lamp		Ma	Ma			N/A
7.2	Intended function or operation of signal indicator		Do	Do			N/A
8	**CIRCUIT DISCONNECTION**						
8.1	Electronic	7.1.11.1	Ma	Do			N/A
8.2	Micro	7.1.11.2	Ma	Do			N/A
8.3	Full	7.1.11.3	Do	Do			P
9	**INSULATING MATERIALS**						
9.1	Proof tracking index PTI... :		Do	Do	175	V	P
9.2	Glow-wire temperature, 650 °C	7.1.9.1	---	Do			N/A
9.3	Glow-wire temperature, 750 °C	7.1.9.2	---	Do			N/A

IEC 61058-2-1						
Clause	Requirement + Test				Result - Remark	Verdict
9.4	Glow-wire temperature, 850 °C	7.1.9.3	---	Do		N/A
10	**COOLING CONDITION**					
10.1	Not requiring forced cooling	7.1.15.1	Do	Do		N/A
10.2	Requiring cooling	7.1.15.2	Do	Do		N/A
10.3	Direction of air for forced cooling		Do	Do		N/A
10.4	Speed of air for forced cooling		Do	Do		N/A
10.5	Thermal resistance of heat sink		Do	Do		N/A
10.6	Incoming temperature, density and other details of the air stream		Do	Do		N/A
11	**PROTECTIVE DEVICE**					
11.1	Rated current / tripping characteristic / breaking capacity of replaceable built-in protection	7.1.18.1	Ma	Do		N/A
11.2	Type / function of non-replaceable built-in protection.	7.1.18.1	Do	Do		N/A
11.3	External protective device rated current, tripping characteristic, breaking capacity	7.1.18.2	Do	Do		N/A
12	**TEST CONDITIONS**					
12.1	For electronic switches	7.1.17.1÷ 7.1.17.4	Do	Do		N/A
12.2	For switches having a contact making and breaking speed independent from the speed of actuation	7.1.17.5	Do	Do		N/A
101	**CATEGORY / TYPE OF APPLIANCE WITH WITCH THE SWITCH MAY BE USED**					
101.1	Cord intended only for controlling luminaries		Do	Do		P
101.2	Category/type of appliance according to IEC 60335-2-17		Do	Do		N/A
8.3	When symbols are used, they be as follows (*see note 1*):					
	☒ Volts (V) ☒ Amperes (A) ☐ Watts (W) ☐ Volt-amperes (VA)					P
	Alternating current (*single-phase*)					
	☒ ∿ ☐ or a.c. ☐ or ∿a.c.					P
	Alternating current (*3-phase*)					
	☐ 3∿ ☐ or 3 a.c. ☐ or 3∿a.c.					N/A
	Alternating current (*3-phase with neutral*)					

IEC 61058-2-1				
Clause	Requirement + Test		Result - Remark	Verdict
	☐ 3 N~ ☐ or 3 N a.c ☐ or 3N~a.c.			N/A
	Direct current			
	☐ ⎓ ☐ or d.c. ☐ or ⎓ d.c.			N/A
	☐ Earth symbol ⏚ ☐ Protective earth symbol ⏚			N/A
	Non-protected against solid objects	IP0X		N/A
	Protected against solid objects	IP1X – IP6X	IP4X	P
	Non-protected against ingress of water	IPX0	IPX0	P
	Protected against ingress of water	IPX1 – IPX7		N/A
	Ambient temperature limit(s)	T	55°C	P
	Frequency of supply	Hz	50/60	P
	Number of operating cycles	See 8.7	1E4	P
	Symbol for micro-disconnection	μ		N/A
	Symbol for the:			
	- “OFF”-position or the direction of actuation to the “OFF” position	○		N/A
	- “ON”-position or the direction of actuation to the “ON” position	|		N/A
	Electronic disconnection	ε		N/A
	Type of load:			
	Incandescent lamp load	☼		N/A
	Tungsten filament lamp load	⊗		P
	Fluorescent lamp load	▭		N/A
	Transformer connection	⧚		N/A
	Iron core transformer with low voltage tungsten filament lamp load	⊗		N/A
	Electronic step-down convertor with low voltage tungsten filament lamp load	⊗		N/A
	Direction of air for forced cooling	↓↓↓		N/A
	Speed of air for forced cooling	m / s		N/A
	Thermal resistance of heat sink	K / W		N/A
	Cyclic duration factor	%		N/A
	Terminal for regulated load	~		N/A
8.4	Information about rated current and rated voltage provided by using figures alone.			
8.4.1	Resistive load and for motor load (example).			

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Clause	Requirement + Test	Result - Remark	Verdict
	- 16(3) A 250 V ~ or 16(3) / 250 ~ or $\frac{16(3)}{250}$ ~		N/A
8.4.2	Resistive load and for capacitive load (example).		
	- 2/8 A 250 V ~ or $\frac{2/8}{250}$ ~		N/A
8.4.3	Resistive load and for tungsten filament lamp load (example).		
	a) 6[16] A 250 V ~ or 6[16] / 250 ~ or $\frac{6[16]}{250}$ ~		N/A
	b) ⊗ 1 A 250 V ~ or ⊗ 1 A / 250 ~ or $\frac{6 \otimes 1}{250}$ ~	⊗ 2 1 / 250 ~	P
8.4.4	Declared specific loads given by reference to drawings or to types, for example:		
	- Electric motor,		N/A
	- Drawing number,		N/A
	- Parts list No.		N/A
	- Made by		N/A
	- Or "5 x 80 W fluorescent lamp load"		N/A
8.4.5	The thermal current I_{th}, if applicable .....:	A	N/A
	Test conditions for verifying I_{th} is specified.		N/A
	Information concerning the thermal current I_{th} is given together with the maximum rated current and marked as the following example shows:		
	3 < 12 / 250 .....:	A	N/A
	If a minimum power is specified it is indicated together with the maximum power and marked as the following example shows:		
	20 W / 100 W .....:	W	N/A
8.5	Information about rated ambient temperature is provided by indicating the lower temperature value preceding the letter "T", the higher temperature value following the letter "T". (example):		
	- No lower temperature value given, the lower temperature value is 0 °C		N/A
	- 25 T 85 (–25 °C up to +85 °C).....:	°C	N/A
	- T 85 (0 °C up to +85 °C).....:	°C	N/A
	If no information is given		
	- rated ambient temperature range is 0 °C up to 55 °C		P
8.5.1	Switches only partially suitable for a rated ambient temperature higher than 55 °C (according to 7.1.3.3), the information is provided as follows (example):		
	-T 85 / 35 (up to 85 °C for the switch body and up to 55 °C for the actuating member).....:	°C	N/A
8.5.2	Switches only partially suitable for a rated ambient temperature higher than 55 °C or 35 °C (see 7.1.3.3 and 7.1.3.4), the information is provided as follows (example):		
	-T 85 / 35 (up to 85 °C for the switch body and up to 35 °C for the actuating member).....:	°C	N/A
8.6	Symbol for Class II equipment or appliance not used for switches.		P

IEC 61058-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
8.7	Information about rated operating cycles by using symbol "E", indicating exponent	1E4	P
8.8	Required marking on a switch is preferably on the body of the switch.		P
	Not on screws, removable washers or other removable.		P
	Marking for replaceable fuse in an electronic switch placed on the fuse-holder or in the proximity of the fuse indicated by symbols (*IEC 60127*).		N/A
	For switches of small dimensions,		
	- the marking may be on different surfaces		N/A
8.9	The required marking legible and durable.		P
	Compliance with the requirements of 8.1 to 8.8 is checked by inspection and by rubbing the marking by hand 15 back-and-forth movements in about 15 s with a piece of cloth		
	- soaked with distilled water, followed by		
	- soaked with petroleum spirit.		
	During the tests the soaked piece of cloth pressed on the marking with a pressure of about 2 N/cm².		
	After these tests the marking is still legible.		P
8.10	Switches with an own enclosure and not intended to be incorporated in an appliance,		
	- "OFF"-position, clearly indicated		N/A
	Switches with micro-disconnection or electronic disconnection		
	- not marked with symbol "O" for the "OFF" position		N/A
	Switches where marking of switch position is impossible or leads to misunderstanding e.g. rocker switches or push-button switches with more than one biased push-button,		
	- direction of actuation(s) is marked		N/A
	Switches having more than one actuating member, this marking is indicate,		
	- for each of the actuating members, the effect achieved by its operation.		N/A
8.11	Electronic cord switches and independently mounted switches if there are more than 2 terminals		
	- the load terminal is marked with an arrow (⇑) pointing away from the terminal		N/A
	- or with one of the symbols mentioned in 8.3 and any other terminals is marked corresponding to the installation instructions.		N/A
	Unless installation of the electronic switch is not made clear by the markings of terminals,		
	- a wiring diagram is provided with each switch		N/A
8.101	- For cord switches intended exclusively for controlling luminaries, no "OFF"-marking is required		P

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Clause	Requirement + Test	Result - Remark	Verdict

9	**PROTECTION AGAINST ELECTRIC SHOCK**		
9.1	Switches are constructed so that there is adequate protection against contact with live parts. Checked by inspection and by the following test:		
	a) Applied to accessible parts on the switch when mounted according to declared with detachable parts, except lamps with caps removed		P
	b) Jointed test finger of IEC 60529 applied without force in every possible position.		P
	Openings preventing the entry of the finger tested by means of a straight unjointed test finger of the same dimensions in IEC 60529		
	- applied with a force of 20 N.		P
	If the unjointed test finger enters the opening		
	- test repeated with the jointed finger in the angled position		P
	An electrical contact indicator is used to show contact.		P
	c) Openings in insulating material and in unearthed metal parts tested by applying the test pin figure 13 without force in every possible position.		P
	Not possible with either the standard test finger or the test pin to touch bare live parts.		P
	For switches which have any parts of double insulation construction		
	- not possible to touch with the standard test finger unearthed metal parts which are only separated from live parts by basic insulation, or by the basic insulation itself		N/A
	Insulating properties of lacquer, enamel, paper, cotton, oxide film on metal parts, beads and sealing compounds which soften in heat		
	- is not relied upon to give the required protection against contact with live parts		N/A
	For cord switches, the test is made when it is fitted with cords either of the smallest or of the largest nominal cross-sectional area specified in Table 4, whichever is more unfavourable		
9.1.1	Accessible metal parts needed for the operation of an electronic switch connected to live parts by means of a protective impedance comply with one of following: Checked by inspection and by the tests in 24.3		
	a) At least 2 independent resistors of same nominal value in series complying with 24.3		N/A
	b) At least 2 independent capacitors in series, of the same value. Capacitors complies with class Y2 according to IEC 60384-14, 2nd edition.		N/A
	At least 1 resistor complying with 24.3 and 1 capacitor complying with class Y2 according to IEC 60384-14, 2nd edition in series.		N/A
	Removal of protective impedances, or their short-circuiting,		
	- only possible by destruction of the electronic switch or by rendering the electronic switch obviously unusable		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The protective impedance is so designed and arranged that the requirements according to Clause 20 are met		N/A
9.1.2	If cover or cover-plate or a fuse can be removed without the use of a tool, the protection against contact with live parts is assured even after removal of the cover or cover-plate. Checked with test probe B according to IEC 61032		
	If a marking showing that the switch can be opened with a tool for replacing the fuse, the protection against contact with live parts shall be assured even after removal of the cover		N/A
	If there is no marking but the instruction shows that a fuse and a cover has to be removed with a tool		
	- contact with live parts is still assured or		N/A
	- instruction state disconnection from supply		N/A
9.1.3	Switch provided with a hole accessible to the user - when mounted as declared - for adjusting the setting of the switch. Checked by applying a test pin according to IEC 61032, figure 3, test probe C, through the hole.		
	- the adjustment do not involve the risk of an electric shock		N/A
	The pin does not touch live parts.		N/A
9.2	Actuating member is adequately fixed if access to live parts can be gained only by breaking or cutting or by dismantling with the aid of a special purpose tool.		
	Checked by inspection and by applying the jointed test finger according to IEC 60529 without force		P
9.3	For switches for appliances other than of Class III, accessible parts of actuating members is of one of the following types:		
	a) Insulating material.		P
	b) Metal separated from basic insulated parts by supplementary insulation.		N/A
	c) Metal separated from live parts by double or reinforced insulation.		N/A
	d) For electronic switches, metal separated from live parts by protective impedances.		N/A
	Item d) Measurements carried out between accessible metal part or any combination of accessible metal parts and earth, through a non-inductive resistor of 2 kΩ		
	- at rated voltage (and rated load in On-state)		N/A
	- in ON- and OFF-state		N/A
	- and / or at lowest and highest setting value		N/A
	During measurements, each one of the resistors and all other components, if any, in the protective impedance, are short-circuited one at a time.		N/A
	The current not exceed, in any measurement		
	- 0,7 mA (*peak value*) for a.c. ≤ 1 kHz or 2 mA for d.c. .....:	mA	N/A
	For frequencies > 1 kHz,		
	- the limit of 0,7 mA is multiplied by the value of the frequency in kHz, but not exceed 70 mA.:	mA	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.4	Capacitors not connected to unearthed metal parts which are accessible when the switch is mounted		N/A
	Metal casing of capacitors are separated by supplementary insulation from accessible unearthed metal parts, when the switch is mounted.		N/A
9.101	Non-rewirable cord switches tested as delivered		P
10	**PROVISION FOR EARTHING**		**N/A**
10.1	Switches for Class II have no provision for earthing.		P
	Interconnections for maintaining the earthing circuit are permitted.		N/A
	Terminals for earthing continuity only if separated from live parts by basic insulation or supplementary insulation for accessible parts		N/A
11	**TERMINALS AND TERMINATIONS**		
11.1 11.1.1	Terminals for unprepared copper conductors Common requirements		N/A
11.2 11.2.1	Terminals for prepared copper conductors and/or terminals requiring the use of a special purpose tool. Common requirements.		
11.2.1.1	Terminals suitable for their purpose when the connection is made as declared		
	- inspection and tests of clauses 16 and 19	Crimped termination for non rewirable swith	P
11.2.1.2	Terminals allow the connection of conductors having cross-sectional areas as declared.		
	- inspection and by fitting conductors of the declared types and cross-sectional areas	2x0,50mm²	P
11.2.1.3	Terminals so designed that they make connection reliably between metal surfaces and without undue damage to the conductor.		
	- inspection and the tests of clauses 16 and 19		P
11.2.1.4	Terminals so designed that the insertion of the conductor is limited by a stop		
	- inspection and tests of 11.2.1.2 and 11.2.1.3		N/A
11.2.2	Screw-type terminals for prepared copper conductors		
	- no further specific requirements.		N/A
11.2.3	Screwless terminals for prepared copper conductors		N/A
11.2.4	Non-disconnectable screw less terminations		N/A
11.2.5	Tabs of flat quick-connect terminations		N/A
11.2.7 11.2.7.1	Solder terminals Solder terminals have sufficient solderability.		N/A
11.2.8	Welded terminations		N/A
11.2.9	Crimped terminations		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
11.3	Additional requirements for terminals for supply connection and connection of external cords		N/A
	Terminal located near to its corresponding terminal of different polarity, and to the earthing terminal.	Type Z	P
12	***CONSTRUCTION***		
12.1	Constructional requirements relating to protection against electric shock		
12.1.1	When double insulation is employed,		
	- basic and the supplementary tested separately		N/A
	a) Basic and supplementary insulation cannot be tested separately, the insulation is considered to be reinforced insulation.		P
	b) Specially prepared specimens, or specimens of the insulating parts, are considered to be ways of providing means of determining compliance.		P
12.1.2	Creepage distances and clearances not reduced, as a result of wear, below values in clause 20.		P
	If any conductive part of the switch becomes loose and moves out of position		
	- not get disposed in normal use that creepage distances or clearances across supplementary or reinforced insulation are reduced		
	For the purpose of this test:		
	- not expected that two independent fixings will become loose at the same time;		P
	- parts fixed by screws or nuts provided with locking washers not liable to become loose;		N/A
	- springs and spring parts not become loose or fall out of position during tests of clauses 18 and 19;		P
	- short rigid wires do not regarded as liable to come away from a terminal, if they remain in position when the terminal screw is loosened.		N/A
12.1.3	Integrated conductors		
	- is rigid and fixed,		N/A
	- or insulated that creepage distances and clearances not reduced below values in clause 20		N/A
	Such insulation not damaged during mounting or in normal use.		N/A
	If the insulation of a conductor is not at least electrically equivalent to cables and cords with the appropriate IEC standard or does not comply with the dielectric strength test made between the conductor and metal foil wrapped around the insulation under conditions specified in clause 15,		
	- the conductor is considered to be a bare conductor		N/A
12.1.4	Electronic switches with combinations of semiconductor switching devices and mechanical switching devices,		

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Clause	Requirement + Test	Result - Remark	Verdict
	- the contacts in series with the semiconductor switching device complies with the requirements for full disconnection or micro-disconnection		N/A
12.1.5	For mechanical switching devices connected in parallel to semiconductor switching devices,		
	- no requirements concerning the type of disconnection are specified		N/A
12.1.101	Solder terminals according to 7.2.12, additional provision shall be provided		N/A
12.2	Constructional requirements relating to safety during mounting and normal operation of the switch		
12.2.1	Covers, cover plates, removable actuators cannot be displaced or removed except by use of a tool		P
	Fixings for a cover or cover plate does not serve to fix any other part except an actuating member		P
	Not possible to mount removable parts, such that indication of switch positions does not correspond with the actual switch position.		N/A
12.2.2	Fixing screws of covers or cover plates captive.		N/A
12.2.3	Switch not damaged when its actuating member is removed as intended.		P
	For actuating members which do not require a tool for their removal,		
	- checked by the tests of 18.4		N/A
12.2.4	Pull-cord is insulated from live parts		N/A
	Possible to fit or to replace it without removing parts causing live parts to become accessible.		N/A
12.2.5	Illuminated indicator incorporated in a switch provides correct indication as declared.		
	Checked by connecting the switch to a voltage ±10 % of marked U_L or U_N.	V	N/A
12.3	Constructional requirements relating to the mounting of switches and to the attachment of cords		
12.3.1	Methods of mounting do not adversely affect compliance with this standard.		N/A
12.3.1.1	Switch cannot rotate, or be displaced, and be removed from an appliance without the aid of a tool.		N/A
	If removal of a part is necessary during the normal use, requirements of clauses 9, 15 and 20 is satisfied before and after such removal.		N/A
12.3.101	Cord anchorages, conductors relieved from strain and twisting, sheath of the flexible cable protected from abrasion and kept in position		P
12.3.102	Clear how relief from strain and twisting is effected		P
12.3.103	Makeshift method not used		P
12.3.104	Cord anchorages is of insulating material or if of metal, insulated from accessible metal parts and insulating surfaces by supplementary insulation		P

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Clause	Requirement + Test	Result - Remark	Verdict
12.3.105	Cord anchorages of rewirable cord switches do not fall out when the cover is removed, even if the switches are not fitted with their flexible cables		N/A
12.3.106	Cord anchorages so designed that:		
	- cord is not fixed by penetration of its insulation		P
	- cord cannot touch clamping screws of the cord anchorage (if accessible)		P
	- cord is not clamped by a screw (if of metal)		N/A
	Rewirable switches		
	- at least one part securely fixed to the switch		N/A
	- replacement of the flexible cable does not use a special tool		N/A
	- suitable for different types of flexible cables		N/A
12.3.107	Rewirable switches: replacement of cord easy; compliance checked by pull and torque tests		N/A
	Non-rewirable:		
	- type of cord .....:	H03VVH2-F	—
	- nominal cross-sectional area (mm²) .....:	2x0,75mm²	—
	Rewirable:		
	- round cord: nominal cross-sectional area (mm²).:		N/A
	- flat cord: nominal cross-sectional area (mm²) .....:		N/A
	Clamping screws of cord anchorage:		
	- insulating type; torque (2/3): torque (Nm)....:		N/A
	- metal type; torque (2/3): torque (Nm) .....:		N/A
	Pull test: pull 100 times at 60 N		P
	Torque test: torque (Nm) for 1 min .....:	0,15 Nm	—
	During the test, cord not damaged		P
	Switches for blankets, pads and similar flexible heating appliances according to IEC 60335-2-17, the pull and torque tests are performed with a pull force of 100 N and a torque of 0,15 Nm		N/A
	After the test, displacement ≤ 2 mm .....:		P
	no strain at the connection		P
	creepage distances and clearances not reduced.		P
	no break in the electrical connections (non-rewirable switch)		N/A
12.3.108	Non-rewirable switches: cord complying with HD 21 or HD 22 .....:	HD21	P
12.3.109	Screws do not serve to fix any other component, unless		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	switch is rendered inoperable or manifestly incomplete		N/A
	Component cannot be removed without a tool		N/A
12.3.110	Cords are capable of withstanding the bending		P
	Inlet or bushing no sharp edges		P
	Cord-guard not integral with the cord, except		P
	switches classified according to 7.2.3		N/A
	Flexing test in the following conditions:		
	- Switches for blanket and similar flexing heating appliances according to IEC 60335-2-17 (5000 flexing, weight: 0,5 kg)		N/A
	- Rewirable switches (10000 flexing, weight: 1 kg)		N/A
	- Non rewirable switches (20000 flexing, weight: 1 kg)		P
	- rated current (A).....:	2A	—
	- type of cord; cross-sectional area (mm²).....:	H03VVH2-F; 2x0,50mm²	—
	- type of cord; cross-sectional area (mm²).....:		—
	During the test:		
	- no interruption of the test current		P
	- no short-circuit between conductors		P
	After the test, no damage		P
12.3.111	Rewirable switches: adequate space for external conductors		N/A
	Possibility to check correct connection		N/A
12.3.112	Rewirable single-pole switch: additional terminal(s) for non-switched conductor(s)		N/A
	Terminals allow the connection of both incoming and outgoing ends		N/A
12.3.113	Non-rewirable switches shall be provided soldered, welded or crimped terminations.....:	Crimped terminations	P
	Non-rewirable switches, screw or flat quick-connect connection shall not be used		P
	Non rewirable switches:		
	flexible cable cannot be separated from the accessory without making it permanently useless		P
	Accessory cannot be opened by hand or by using a general purpose tool, for example a screwdriver used as such		P
12.3.114	Prewired switch: current rating of the flexible cable compatible with the current of table 102; rated current (A); nominal cross-sectional area (mm²): required; measured.....:		P

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Clause	Requirement + Test	Result - Remark	Verdict
12.3.115	Rewirable switches provided for earthing continuity: ample space for slack protective earth conductor		N/A
	Test: protective earth conductor led to its terminals and cut off 8 mm longer than necessary; possibility to house the loop freely without squeezing or pressing the core		N/A
12.3.116	Switches with means for suspension shall have adequate mechanical strength		N/A
	Test (barrier): cylindrical steel rod pushed with a force of 75 N for 10 s; the rod shall not pierce the barrier		N/A
	Pull test: pull 60 N for 10 s to supply flexible cable; during the test, means for suspension shall not break, or		N/A
	if broken live parts shall not become accessible to test finger		N/A
12.3.117	Pull test with a round head screw: pull 50 N for 10 s; during the test, means for suspension shall not break, or		N/A
	if broken live parts shall not become accessible to test finger		N/A
13	**MECHANISM**		
13.1	These requirements apply only to those electronic switches with mechanical switching devices. d.c. switches, (checked during tests in clause 17)		
	- speed of contact making and breaking is independent of the speed of actuation		N/A
	- except for switches with a rated voltage ≤ 28 V or a rated current ≤ 0,1 A		N/A
13.2	Moving contacts can come to rest only in the "ON" and "OFF" positions. Intermediate position permissible if it corresponds to:		
	- an intermediate position of the actuating member providing not give a misleading indication of a marked "OFF" position and separation of the contacts is adequate		P
	Switch in position		
	- “ON” contact pressure comply with clause 16		P
	- “OFF” separation of contacts comply clause 15		P
	Separation of the contacts in an intermediate position		
	- comply with clause 15 for "OFF" position		
13.3	When the actuating member is released,		
	- it take automatically or stay in the position corresponding to the moving contacts;		Fail
	- except only one rest position.		N/A
13.4	Cord operated switch that after actuating the switch and releasing the cord		

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Clause	Requirement + Test	Result - Remark	Verdict
	- parts of the mechanism allow performance of the next movement in the cycle of actuation.		N/A
	Cord-operated switches actuated from any position, to the next position,		
	- by a pull ≤ 45 N vertically downwards,		N/A
	- or 70 N at 45° to the vertical.		N/A
13.5	Multi-pole switches makes and breaks all related poles substantially together unless otherwise declared according to 6.2 of table 3.		N/A
	Switches with switched neutral,		
	- the neutral may make before and break after the others		N/A
14	**PROTECTION AGAINST SOLID OBJECTS, INGRESS OF WATER AND HUMID CONDITIONS**		
14.1	Protection against ingress of solid foreign objects		
	Switches provide declared degree of protection as in 13.3 of IEC 60529, against solid foreign objects when mounted and used as declared		P
	Detachable parts are removed		P
	Switch which relies on mounting in, or on, an appliance for the declared degree of protection against solid foreign objects or on		
	- mounted in or on a closed box to simulate the appliance		P
	- tests performed using this simulated assembly		P
	For numerals 5 and 6		
	- test carried out according to category 2 with the specimen in the most unfavourable position to the manufacturer's declarations for a period of 8 h		N/A
	- During the 8 h the switch loaded alternatively for 1 h with the maximum I_R and 1 h without current.		N/A
	For the test for first characteristic numeral 5, the switch complies if:		
	- all actions function as declared;		N/A
	- $\triangle t$ at the terminals ≤ 55 K tested as in 16.2 at I_R and at 25 ± 10°C .....:	K	N/A
	- dielectric strength of 15.3 with no humidity treatment before application of test voltage. Test voltage is 75 % of the test voltage in 15.3 .....:	V	N/A
	- no transient fault occurred		N/A
	Test for 1 st characteristic numeral 6, no deposit of dust is inside the switch at the end of the test.		N/A
14.2	Protection against ingress of water Degree of protection against ingress of water when mounted and used as declared.		N/A
14.3	Protection against humid conditions All switches proof against humid conditions which may occur in normal use.		
	Cable inlet openings and drain-holes left open.		

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Clause	Requirement + Test	Result - Remark		Verdict
	Drain-hole for a water-tight switch is opened.			
	a) Detachable parts removed and subjected to the humidity treatment with the main part.			
	b) Humidity treatment in humidity cabinet containing air with humidity between 91 – 95% ....:	93	%	
	The temperature of the air is maintained within ±1°C of value (t) between 20 – 30°C .....:	25	°C	
	c) Before placed in the humidity cabinet, specimens brought to a temperature between t and t + 4°C .....:	25	°C	
	The specimens are kept in the cabinet for 96 h ....:	48	h	
	Immediately after this treatment, clause 15.2 and 15.3 are made			
	The switch does not show any damage			P
15	**INSULATION RESISTANCE AND DIELECTRIC STRENGTH**			
15.1	The insulation resistance and the dielectric strength of switches shall be adequate. Checked by the tests of 15.2 and 15.3, immediately after test of 14.3.			
	The foils are not pressed into openings but are pushed into corners and the like by means of the standard test finger			P
	Basic insulation and supplementary insulation cannot be tested separately,			
	- the insulation is subjected to the test voltages for reinforced insulation			P
	For electronic switches the tests			
	- is carried out only on electronic switches with mechanical switching devices connected in series with the semiconductor switching device			N/A
	- are not carried out across protective impedances and poles interconnected by components			N/A
15.2	Insulation resistance is measured with a d.c. voltage of approximately 500 V applied.			P
	Measurements made 1 min after application of the voltage.			P
	Insulation resistance not less than specified in table 11.			P

Table 11	**Minimum insulation resistance**			
	Insulation to be tested	Insulation resistance		
	Functional	≥ 2 MΩ	>> 2 MΩ	P
	Basic	≥ 2 MΩ		N/A
	Supplementary	≥ 5 MΩ		N/A
	Reinforced	≥ 7 MΩ	>>7MΩ	P

15.3	The insulation is subjected to a voltage of substantially sine wave form 50 or 60 Hz. The test voltage raised uniformly from 0 V to in table 12 within 5 s and kept for 5 s.	

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Clause	Requirement + Test	Result - Remark	Verdict

Table 12	**Dielectric strength**	Rated voltage (V)	**250V**		
	Insulation or disconnection to be tested	Test voltage (V)			
	Functional	1500			P
	Basic				N/A
	Supplementary				N/A
	Reinforced	3000			P
	Across electronic disconnection				N/A
	Across micro-disconnection				N/A
	Across full disconnection	1500			P
	No flash over or breakdown occurs.				P
	Glow discharges without drop in voltage are neglected				P

16	**HEATING**			
16.1	General requirements Switches are so constructed that they do not attain excessive temperatures in normal use.			
16.2 16.2.1	Contacts and terminals The material and design of the contacts and terminals			
	- is such that the operation and performance of the switch is not affected by their oxidation or other deterioration.			
16.2.2	a) Terminals for **unprepared** conductors fitted with conductors of ≥1 m or declared and with medium or declared cross-sectional area in table 4	0,50	mm²	
	b) Terminals for **prepared** conductors fitted with conductors of **1 m or less if declared** and have a cross-sectional area as declared	-	mm²	
	c) Terminal screws and/or nuts are tightened with a torque equal to 2/3 in table 20	-	Nm	
	d) Actuating members of biased switches are fixed in the declared "ON" position.			
	e) On switches fitted with screwless terminals, care taken to ensure that the conductors are correctly fitted to the terminals in accordance with clause 11.			
	f) Poles of switches, which make simultaneously may be connected in series by means of conductors.			
	Minimum length of the conductors between two poles is 1 m unless declared a length below 1 m ... :	1	m	
	g) Placed or mounted as declared in a suitable heating or refrigerating cabinet without forced convection.			
	h) Switches with a T-rating ≤ 55 °C are tested at 25 ± 10 °C without forced convection.....:	23	°C	

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Clause	Requirement + Test	Result - Remark	Verdict

	Switches with T-rating > 55 °C are placed in a heating cabinet without forced convection :	-	°C	
	The temperature of the cabinet is maintained at T ± 5 °C or T ± 0,05 T whichever is greater.....:	-	°C	
	Switches only partially suitable for a rated ambient temperature higher than 55 °C			
	parts which are accessible when the switch is mounted as declared is exposed to a temperature not higher than 55 °C ..... :	-	°C	
	i) The temperature of the air in which the specimens are placed, is measured as near as possible to the centre of the space occupied by the specimens and at a distance ≈ 50 mm from the specimen.			
	j) Actuating member left in the most unfavourable "ON" position and the switches loaded with a current of $1.06I_R$ for resistive load .....:	2,12	A	
	Switches for a.c. voltage and switches for d.c. voltage where no polarity is given,			
	- the test is performed with d.c. voltage in both polarities and an average value calculated... :		V	
	Multiway switches according to 7.1.10.4.1 to 7.1.10.4.5 are loaded as in 17.2.1.1 resulting the maximum heating.			
	The individual loads for switches for declared specific load follows manufacturer's declaration.			
	k) Components (other than contacts and their associated current carrying parts) are not energized during the test.			
	l) The maximum rated current is maintained at least for 1h or until a constant temperature at the terminals is attained.			
	Temperature is constant when 3 successive readings taken at intervals of 5 min indicate no change > ±2 °C			
	m) Temperature at the terminals is determined by means of fine wire thermocouples positioned on the terminals as close as possible to the body of the switch.			
	n) Δt at the terminals does not exceed 45 K.....:	Max 15	K	P
	o) For electronic switches the following additional test conditions apply:			
	- Electrical contacts in series with a semiconductor switching device, the semiconductor switching device is short circuited.			N/A
	- Cord switches tested laying on a dull black painted plywood surface in the normal position;			N/A
	- If switch with a mechanical contact connected in parallel to the semiconductor switching device, the temperature rise is measured immediately before the contacts close.			N/A
	- Switches according to 7.1.17.1, 7.1.17.2 and 7.1.17.4 are tested as in a) to n), using resistive load			N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	- Switches for test conditions of end application (see 7.1.17.3) are tested in or together with the appliance(s).			N/A
16.3 16.3.2	Other parts For mechanical switches compliance is checked by the following tests:			
	a) Mounted as declared, fitted with conductors and loaded with a test current in 16.2.2 and carried out at maximum rated temperature.....:	55	°C	
	b) Switches only partially suitable for a rated ambient temperature higher than 55 °C			
	- parts accessible when the switch is mounted are exposed to a temperature not higher than 55 °C.....:	-	°C	
	c) The temperature of metal mounting surfaces of test equipment is between T and ambient temperature	-	°C	
	d) If heating sources other than electronic components are incorporated or integrated in the electronic switch			
	- these circuits are connected to a supply voltage between 0.94 – 1.06 x U_N .....:	-	V	
	e) Temperature of parts and/or surfaces of the switch in table 13 are determined by means of fine wire thermocouples or other equivalent means and positioned that they have minimum effect on the temperature of the part under test.			
	f) Thermocouples used for the temperature of surfaces are attached to the back of blackened discs of copper or brass 5 mm in ∅ and 0.8 mm thick.			
	The discs are positioned on part of the surface likely to attain the highest temperature in normal use.			
	g) Temperature of actuating members, given to all parts gripped in normal use and to non-metallic parts where they are in contact with hot metal.			
	h) During this test the temperatures does not exceed the values specified in table 13.			P
16.3.3	For electronic switches compliance is checked by the following tests:			N/A

Table 13	***Permissible maximum temperatures***	***°C***	***Normal conditions***	
	Rubber or polyvinyl chloride insulation of non-detachable cables and cords:			
	- without T-marking .....:	75	55	P
	- with T-marking .....:			N/A
	Cord sheaths as supplementary insulation..:	60	55	P
	Rubber other than synthetic, used for gaskets or other parts, the deterioration of which could affect safety used as:			
	- supplementary or as reinforced insulation.....:	65		N/A
	- in other cases .....:	75		N/A
	Material used as insulation other than that specified for wires:			
	- printed circuit boards .....:			N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	Moulding of:			
	- thermosetting materials .....:			N/A
	- thermoplastic materials .....:		70	P
	All accessible surfaces except those of actuating members or handles .....:	85	55	P
	Accessible surfaces of actuating members or handles which are held for short periods only of:			
	- metal .....:	60		N/A
	- porcelain or vitreous material .....:	70		N/A
	- moulded material or rubber .....:	85	53	P
	Inside of enclosures of insulating material			N/A
	Windings - Thermal classification:			
	- class: ⇒			N/A
	Terminals and terminations for unprepared conductors acc. to table 4	80		N/A
	Other terminals and terminations .....:			N/A
Table 14	**Maximum temperatures for thermosetting materials used for electronic switches**			N/A

17	**ENDURANCE**		
17.1	General requirements		
17.1.1	Switches withstand without excessive wear or other harmful effect, the electrical, thermal and mechanical stresses that occur in normal use.		Fail
	The electrical, thermal and mechanical conditions of these tests as specified in 17.2.1, 17.2.2 and 17.2.3.		Fail

Table 15	**Electrical endurance tests for the different types of electronic switches with or without electrical contact(s)** **Complete switch**	N/A

Table 16	**Test loads for multiway switches**		N/A
	The load for the other switch positions is that resulting from the loads necessary to achieve the conditions specified above.		N/A
	For circuits according to 7.1.2.7 for specific lamp load,		
	- connection and test load is as specified by manufacturer using the maximum occurring inrush current at room temperature.		N/A
	No electrical endurance tests are necessary for switches for 20 mA load as classified in 7.1.2.6.		N/A
	Electronic switches		
	- test circuit as shown in figure 19.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	- the declared load set at rated voltage before the electronic switch is inserted into the circuit		N/A
17.2.1.2	When increased-voltage conditions, the loads used are those for tests at U_N		
	- the voltage then being increased to 1,15 U_N		P
	Test circuits for capacitive load tests and simulated lamp load tests for a.c. circuits		
	- the test voltage is U_N and the test currents are increased to 1,15 times rated currents I_R		P

Table 17	***Test loads for electrical endurance tests for a.c. circuits***				
	Circuit ⇒	**2A 250V~**	⊗ **1A 250V~**		
Type of circuit as classified in 7.1.2		***Substantially resistive (classified in 7.1.2.1)***			
Operation	Making and breaking				
Test voltage	U_N (V)	250V			
Test current (r.m.s.)	I_R (A)	2A			
Power factor	≥ 0.9	0,95			
Type of circuit as classified in 7.1.2		***Tungsten filament lamp load (classified in 7.1.2.4)***			
Operation	Making				
Test voltage	U_N (V)		250V		
Test current (r.m.s.)	I (A)		16A		
Operation	Breaking				
Test voltage	U_N (V)		250V		
Test current (r.m.s.)	I (A)		1A		

Table 18	***Test loads for electrical endurance tests for d.c. circuits***	N/A

17.2.2 17.2.2.1	Thermal conditions For switches according to 7.1.3.2 and 7.1.3.4.2			
	- 1st half of test at maximum T-rating (+5 / 0)°C ....:		°C	N/A
	- 2nd half of test at 25°C ± 10°C .....:		°C	N/A
	- or at the minimum T-rating (0 / -5)°C if T< 0°C ..:		°C	N/A
17.2.2.2	Switches according to 7.1.3.3, parts declared for use at 0°C to 55°C			
	- is exposed to a temperature within this range.....:		°C	N/A
	The ambient air temperature of the remainder of the switch,			
	- 1st half of test at maximum T-rating (T-0/+5)°C...:		°C	N/A
	- 2nd half of test are carried out at 25 ± 10 °C :		°C	N/A
	- or at minimum T-rating (0 / -5) °C if T < 0 °C .....:		°C	N/A
17.2.3 17.2.3.1	Manual and mechanical conditions Operating speed for the operating cycles except electronic switches, is as follows: a) For slow speed approximately:			
	- 9°/s for rotary actuations at an angle ≤ 45°;			N/A
	- 18°/s for rotary actuations at an angle >45°;			N/A
	- 20 mm/s for linear actuations			P
	b) For high speed:			
	- actuating member actuated by hand as fast as possible.			N/A
	c) For accelerated speed approximately:			
	- 45°/s for rotary actuations at an angle ≤ 45°;			N/A
	- 90°/s for rotary actuations at an angle > 45°;			N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- 80 mm / s for linear actuations.		P
	For the tests of electronic switches: d) for slow speed approximately:		
	- 9 °/s for rotary actions;		N/A
	- 5 mm/s for linear actions;		N/A
	e) for high speed,		
	- the actuation member actuated by hand as fast as possible.		N/A
	If a switch is delivered without an actuating member,		
	- then a suitable actuating member is supplied by the manufacturer for the purpose of this test;		N/A
	f) For accelerated speed approximately:		
	- 45 °/s for rotary actions,		N/A
	- 25 mm/s for linear actions.		N/A
17.2.3.2	For biased switches, the actuating member is moved to the limit of travel of the opposite position.		P
17.2.3.3	During the slow speed test, the test apparatus drives the actuating member positively, without backlash between the apparatus and the actuating member.		P
17.2.3.4	During the accelerated speed test:		
	a) Care taken that test apparatus allows actuating member to operate freely.		P
	b) Switches for a rotary actuation where the movement is not limited in either direction, 3/4 of operating cycles made in a clockwise and 1/4 in an anti-clockwise direction.		N/A
	c) Switches for rotary actuation in one direction only, the test is performed in the designed direction.		N/A
	d) Additional lubrication not applied during these tests.		P
	e) Forces applied to the end stops of the actuating members does not exceed declared values (if any) for rotary and linear actuation.		N/A
	The declared full travel of the actuating member (if any) applied during these tests.		N/A
17.2.3.4.1	As the design allows, except for locked rotor tests as in 17.2.4.9, capacitive and simulated lamp load tests according to figure 9a and figure 9b, the switches are operated at a rate of:		
	- 30 operations / minute, if I_R < 10 A;		P
	- 15 operations / minute, if I_R > 10 A but < 25 A;		N/A
	- 7,5 operations / minute, if $I_R \geq$ 25 A		N/A
	- ON period = 25 % of an operating cycle.		P
	- OFF period = 75 % of an operating cycle.		P
	- ON period = 50 % of an operating cycle for switches classified 7.1.13.2.3, 7.1.13.2.5, 7.1.13.2.7 and 7.1.13.2.9.		N/A
17.2.3.4.2	For capacitive and simulated lamp load tests according to figure 9a and figure 9b,		
	- switches operated 2 s ON and 15 s OFF		N/A
17.2.3.4.3	For locked rotor tests, the switches		
	- operated at a rate of 1 s ON and 30 s OFF.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

17.2.4	Type of test condition (TC)						
17.2.4.1	Increased-voltage test at accelerated speed (TC1) Electrical conditions as in 17.2.1	Circuit:	**2A 250V~**	⊗ **1A 250V~**		
	Method of operation specified for accelerated speed in 17.2.3.					
		Test voltage.....1,15 x U_N (V)	287,5V	287,5V		
	Making →	Test current. (A)	2,3A	18,4A I_{peak}		
		Power factor (φ) or Time constant (ms)	0,95	0,95		
	Breaking→	Test current. (A)	2,3A	1,15A		
		Power factor (φ) or Time constant (ms)	0,95	0,95		
	Number of operating cycles is 100. Samples 1, 2, 3:	1) 2) 3)	100 100 100	100 100 100		P
17.2.4.2	Test at slow speed (TC2) Electrical conditions as in 17.2.1	Circuit:	**2A 250V~**	⊗ **1A 250V~**		
	Method of operation specified for slow speed in 17.2.3.					
		Test voltage (V)	250V	250V		
	Making →	Test current. (A)	2A	16A I_{peak}		
		Power factor (φ) or Time constant (ms)	0,95	0,95		
	Breaking→	Test current. 2A	2	1A		
		Power factor (φ) or Time constant (ms)	0,95	0,95		
	Number of operating cycles is 100. Samples 1, 2, 3:	1) 2) 3)	100 100 100	100 100 100		P
17.2.4.3	Test at high speed (TC3) (*only switches with more than one pole and with reversal polarity)*. Electrical conditions as in 17.2.1.	Circuit:				N/A
17.2.4.4	Test at accelerated speed (TC4) (*For all switches except electronic switches*.) Electrical conditions as in 17.2.1	Circuit:	**2A 250V~**	⊗ **1A 250V~**		
	Method of operation specified for accelerated speed in 17.2.3.					
		Test voltage (V)	250V	250V		
	Making →	Test current. (A)	2A	16A I_{peak}		
		Power factor (φ) or Time constant (ms)	0,95	0,95		
	Breaking→	Test current. (A)	2	1A		
		Power factor (φ) or Time constant (ms)	0,95	0,95		
	The thermal conditions are those specified in 17.2.2.					
	Number of operating cycles declared 7.1.4		10000	10000		
	- less **number** of 17.2.4.1		100	100		
	- less **number** of 17.2.4.2		100	100		

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Clause	Requirement + Test	Result - Remark	Verdict

	- less **number** of 17.2.4.3					
	= number to test		9800	9800		
	Samples 1, 2, 3:	1) 2) 3)	Fail Fail Fail	N/C N/C N/C		Fail
17.2.4.9	Locked-rotor test (TC9)	Circuit:				N/A
17.2.4.10	Test at very slow speed (TC10) Electrical conditions as in 17.2.1	Circuit:				N/A
17.2.5 17.2.5.1	Evaluation of compliance Functional compliance (TE1) switch complies if	Circuit:				
	- all actions function as declared;					N/C
	- no loosening of electrical / mechanical connections occur;					N/C
	- sealing compound does not flow to such an extent that live parts are exposed.					N/C
17.2.5.2	Thermal compliance (TE2) - Δt at the terminals < 55K tested in accordance with 16.2 at I_R and 25°C ± 10 °C					
	Test current	(A)	2,12A	1,06		
	Samples 1, 2, 3:	1) 2) 3)				N/C
17.2.5.3	Insulating compliance (TE3) - dielectric strength of 15.3 with specimens not subjected to humidity treatment before application of the test voltage 75 % of the test voltage in sub-clause 15.3:					
	Samples 1, 2, 3: no transient fault occurred - Over contact gap(s) - Between live parts of different polarity - Between live parts and earth metal - Between live parts and accessible metal parts or actuating members etc.	1) 2) 3)				N/C
	Electrical endurance tests for the different types of electronic switches with or without electrical contact(s). **- Complete switch. Functional test TL1, TC5, TC6, TC8, TE1, TE3**					**N/A**
	- Complete switch. Continue. Simulated test TL3, TC5, TC6, TC8, TE1,TE3					**N/A**
	- Complete switch. Continue. Specific test condition of end application TL4, TC5, TC6, TC8, TE1, TE3					**N/A**
	Contacts only. Functional test TC1, TC4 with TL2, TE1 to TE3					**N/A**
	- Contacts only (continue) Simulated test TC1, TC7 with TL3, TE1 to TE3					**N/A**
	- Contacts only (continue) Specific test condition of end application TC7 with TL4, TE1 to TE3					**N/A**

18	**MECHANICAL STRENGTH**		
18.1	Switches have adequate mechanical strength and so constructed as to withstand such rough handling as may be expected in normal use.		
18.2	Applying blows to the specimen by means of the spring-operated impact test apparatus of IEC 60068-2-75.		

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Clause	Requirement + Test	Result - Remark	Verdict
	Actuating member and all surfaces accessible when the switch is mounted as in normal use and declared are tested with test apparatus		
	Incorporated switches		
	- mounted in a test device as shown in figure 11		
	Blows are applied to all accessible surfaces, including actuating members.		
	The test apparatus		
	- calibrated to deliver an energy of 0,5 ± 0,04 Nm.	0,5 ± 0,04 Nm	
	Foot-actuated switches subject to the same test but using a test apparatus		
	- calibrated to deliver an energy of 1,0 ± 0,05 Nm	-	
	For all such surfaces		
	- 3 blows applied to every point that is likely to be weak.	3 blows	
	Care taken that the results from 1 series of 3 blows do not influence subsequent series.	-	
	Foot-operated switches are, in addition,		
	- subjected to a force applied by means of a circular steel pressure plate with a ∅ of 50 mm	-	
	The force is increased continuously from an initial value of about 250 N up to 750 N within 1 min ..... :	- N	
	Maintained at this value, 750 N for 1 min.	-	
	After these tests the switch still comply with the requirements of:		
	- clauses 9		P
	- clauses 13		P
	- clauses 15		P
	- clauses 20		P
	Insulating linings, barriers and the like have not worked loose.		P
	Still possible to		
	- remove and to replace detachable and other external parts such as cover plates without these parts or their insulating linings being broken		N/A
	- actuate the actuating member to provide the appropriate disconnection		P
	Damage to the finish, small dents which do not reduce creepage distances or clearances below the values in clause 20, and small chips which do not adversely affect the protection against electric shock or moisture		
	- are neglected.		N/A
	Cracks not visible to the unaided eye, surface cracks in fibre reinforced mouldings and the like		
	- are ignored		N/A
	If a decorative cover is backed by an inner cover,		

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Clause	Requirement + Test	Result - Remark	Verdict
	- fracture of decorative cover is neglected if the inner cover withstands the test after removal of the decorative cover.		N/A
18.3	Cord-operated switches are submitted to an additional pull test as follows:		
	Switch mounted as declared by the manufacturer.		N/A
	Pull-cord subjected to a force, applied without jerks, first for 1 min in the normal direction		N/A
	Then for 1 min in a direction ≥ 45° from the normal direction.		N/A
	Minimum values of the pull force as in table 19 or 3 times the values of the normal operating force if greater.		N/A
18.4	Switches supplied with, or intended to be fitted with actuating members tested as follows.		
	A pull force is applied for 1 min to try to pull off the actuating member normally 15 N.		
	If the actuating member is intended to be pulled in normal use		
	- the force is increased to 30 N		
	A push of 30 N for 1 min is applied to all actuating members	30N	
	After tests, the specimen show no damage to impair compliance with this standard.		P
	If a switch is intended to have an actuating member but is submitted for approval without		
	- pull and push of 30 N are applied to the actuating means		P
18.101	Tumbling barrel (other than foot operated switches):		P
	- rewirable: cord type; cross-sectional area (mm²) :		N/A
	- non-rewirable as delivered	2x0,50mm² H03VVH2-F	P
	- number of falls .....:	1000	—
	- during the test: connection shall not become loose		P
	- after the test, no damage		P
18.102	Compression test (only for foot operated switches): 3 compressions in three different positions; force of 250 N increased to 750 N and maintained for 1 min; after the test, no damage		N/A

19	SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS		
19.1	General requirements for electrical connections Contact pressure is not transmitted through insulating material other than:		
	- ceramic		N/A
	- pure mica		N/A
	- or other material no less suitable		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- unless there is visual evidence of sufficient resiliency in the metallic parts to compensate for any possible shrinkage or distortion of the insulating material		P
	Suitability of the material is considered in respect to:		
	- stability of the dimensions within the temperature range applicable to the switch.		N/A
	Requirement not applicable to connections internal to a switch where the connection		
	- is used for lamps for indicating purposes and where the current in this circuit is ≤ 20 mA		N/A
19.2 19.2.1	Screwed connections Screwed connections, electrical or other,		N/A
Table 20	**Torque values**		N/A
Table 21	**Torque values for screwed glands**		N/A
19.3	Current-carrying parts		
	Metals resistant to corrosion when used within the permissible temperature range and under normal conditions of chemical pollution, are containing:		
	- copper;		N/A
	- alloy ≥ 58 % copper for parts that are worked cold		P
	- or ≥ 50 % copper for other parts;		N/A
	- stainless steel containing ≥ 13 % chromium and ≤ 0,09 % carbon;		N/A
	Steel provided with an electroplated coating of having a thickness of at least		
	- zinc, ISO 2081 (μm)		N/A
	- nickel and chromium, ISO 1456 (μm)		N/A
	- tin, ISO 2093 (μm)		N/A
	Parts subjected to arcs and mechanical wear, not made of steel provided with an electroplated coating.		P
19.101	Insulating material screws: diameter (mm); torque (Nm) .....:		N/A
	Insulating material screws: diameter (mm); torque (Nm) .....:		N/A
19.102	Not possible to replace screws of insulating material with metal screws (if impair safety)		N/A
20	**CLEARANCES, CREEPAGE DISTANCES, SOLID INSULATION AND COATINGS OF RIGID PRINTED BOARD ASSEMBLIES** Generally for the measurements		
	- Detachable and movable parts placed in the most unfavourable position.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- Distances through slots or openings in surfaces of insulating material are measured to a metal foil in contact with the surface.		P
	- The foil is pushed into comers and the like by means of the standard test finger of IEC 60529, but is not pressed into openings.		P
	- A force is applied to bare conductors and accessible surfaces in order to attempt to reduce clearances when making the measurement. The force is:		
	- 2N for bare conductors		N/A
	- 30N for accessible surfaces.		N/A
	Force is applied by means of a straight unjointed test finger of same dimensions as shown in figure 1 of IEC 60529.		N/A
	When applied to openings as specified in 9.1,		
	- the distance through insulation between live parts and the metal foil not reduced below the specified values		P
20.1	**Clearances** Withstand the rated U_{imp} declared according to 7.1.10 considering the:		
	- rated voltage and overvoltage category as in annex K	250V overvoltage category II	P
	- pollution degree declared by the manufacturer	2	P
20.1.1	Clearances for basic insulation		
	- ≥ the values given in table 22.		P
	Smaller clearances except those values marked in table 22 with note 5 may be used if the switch meets the U_{imp} test of annex M		
	- only if the parts are rigid or located by mouldings		N/A
	- or if the construction is such that there is no likelihood of the distances being reduced by distortion,		N/A
	- or by movement of the parts during mounting, connection and normal use		N/A
20.1.2	Clearances for functional insulation		
	- ≥ the values for basic insulation in 20.1.1.		P
20.1.3	Clearances for supplementary insulation		
	- ≥ the values given in table 22.		P
20.1.4	Clearances for reinforced insulation		
	≥ the values for basic insulation in 20.1.1 but using the next higher step for the rated U_{imp} in table 22.		P
20.1.5	Clearances for disconnection		
20.1.5.1	Electronic disconnection		
	No clearances are specified.		N/A
20.1.5.2	Micro disconnection		

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Clause	Requirement + Test	Result - Remark	Verdict
	Clearances between terminals and terminations fulfil functional insulation according to 20.1.2.		N/A
	Clearances between other current carrying parts separated by action of the switch		
	- the actual value of distance between contacts		N/A
	- ≥ 0,5 mm for switches with a rated U_{imp} of ≥1.5 kV.		N/A
20.1.5.3	Full disconnection		
	Clearances for full disconnection ≥ the values for basic insulation specified in 20.1.1. except that,		
	- smaller values than given in table 22 are not allowed		P
	Switch is provided by two or more breaks in series,		
	- the separation is the sum of the distances of the breaks		N/A
	Each break not less than 1/3 of the prescribed distance.		N/A
20.2	Creepage distances are dimensioned for the voltage to occur in normal use and pollution degree as declared by the manufacturer		
	Relationship between material group and proof tracking index (PTI) values:		
	Material group.....:	IIIa ⇒ PTI: 175V	P
	PTI values obtained in accordance with Annex D.		P
20.2.1	Creepage distances for basic insulation		
	- ≥ the values given in table 23		P
20.2.2	Creepage distances for functional insulation		
	- ≥ the values given in table 24		P
20.2.3	Creepage distances for supplementary insulation		
	- ≥ the values specified for basic insulation in 20.2.1		P
20.2.4	Creepage distances for reinforced insulation		
	- ≥ double the values for basic insulation in 20.2.1		P
20.2.5	Creepage distances for disconnection		
	- ≥ the values for functional insulation in 20.2.2		P
20.3	Solid insulation withstanding electrical and mechanical stresses, thermal and environmental influences which may occur during the anticipated life of the switch		
	- checked during the tests of clauses 14, 15, 16 and 17.		P
	Distance through accessible supplementary solid insulation		
	- have a minimum value of 0,8 mm		P
	Distances through accessible reinforced solid insulation have minimum values:		
	- for rated U_{imp} ≤ 1500 V: ≥ 0,8 mm;		N/A
	- for rated U_{imp} ≥ 2500 V: ≥ 1,5 mm.		P
	Working voltage (V):	250V	

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Clause	Requirement + Test	Result - Remark	Verdict

	Degree of pollution:	☐ 1 ☒ 2 ☐ 3			
Table 22 / 24	Creepage distance Cd and clearance Cl across:	required Cd (mm)	Cd (mm)	required Cl (mm)	Cl (mm)
	Functional, sealed or encapsulated	-	-	-	-
	Functional,	2,5	>2,5	1,5	>1,5
	Basic	-	-	-	-
	Supplementary	-	-	-	-
	Reinforced	5,0	>5,0	3,0	>3,0
	Full disconnection	2,5	>2,5	1,5	>1,5
	Micro disconnection	-	-	-	-
20.4	Coatings of rigid printed board assemblies.				
	- provide protection against pollution and/or insulation depending on the used type A or type B coating				N/A
20.4.1	**Type A coating:** The insulation distances of a printed board assembly with type A coating declared by comply with pollution degree 1 of clearances in table 22 and of creepage distances in table 24.				
	- checked by measurement and by the relevant tests of clause 6 of IEC 60664-3 with the test levels or conditions as given in table 25				N/A
Table 25	**Test levels and conditions**				N/A
20.4.2	**Type B coating:** A rigid printed board assembly with type B coating as declared by the manufacturer comply with the requirements for solid insulation as specified in 20.3. No clearances and creepage distances are specified between conductors on printed boards under the coating.				
	- checked by the relevant test of clause 6 of IEC 60664-3 with test levels or conditions as in table 25 and the test specimens as in 20.4.1				N/A

21 21.1	**FIRE HAZARD** Resistance to heat Checked by the tests specified in IEC 60695-10-2 with the new samples at the following temperatures:			
	a) for parts accessible when the switch is mounted as declared:			
	- 20 °C ± 2 °C plus the maximum measured during heating test of 16.3 or - as declared or - 75 °C ± 2 °C, whichever is the highest.	75	°C	P
	The ∅ of the impression by the ball not > 2 mm.	Max 0,8	mm	P
	b) for parts in contact with, maintain or retain electrical connections in position including those parts which maintain an electrical connection under spring force and for parts in contact with support heat-source,			

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Clause	Requirement + Test		Result - Remark	Verdict
	- T_b *(T_b=T+20)* or - 125 °C or - 20 °C ± 2 °C plus the maximum measured during heating test of 16.3 if it would give a higher temperature	125	°C	P
	The ∅ of the impression by the ball not > 2 mm.	Max 1	mm	P
21.2	Resistance to abnormal heat Checked by the tests specified in IEC 60695-2-11 with one new sample at the declared glow-wire temperatures:			
	a) for parts in contact with, maintain or retain in position electrical connections including those parts which maintain an electrical connection under spring force:			
	- glow-wire test at 650 °C			P
	- glow-wire test at 750 °C			N/A
	- glow-wire test at 850 °C			N/A
	All other parts			
	- glow-wire test of annex C at 650 °C			P
	No visible flame and no sustained glowing			P
	Flame and glowing extinguish within 30 s .....:			P
	No ignition of the tissue paper			P
22	**RESISTANCE TO RUSTING**			
	Ferrous parts, the rusting of which might impair safety, adequately protected against rusting.			P
	Traces of rust on sharp edges and any yellowish film removable by rubbing are ignored.			P
23	**ABNORMAL OPERATION AND FAULT CONDITION FOR ELECTRONIC SWITCHES**			N/A
24	**COMPONENTS FOR ELECTRONIC SWITCHES**			N/A
25	**EMC REQUIREMENTS**			N/A
Annex D	***Proof tracking test*** *(PTI)* (normative)			
	Proof tracking test made in accordance with IEC 60112.			P
Annex K	***Relation between rated impulse withstand voltage U_{imp}, rated voltage UN and overvoltage category*** *(*normative*)*			
Table K1	***Rated impulse withstand voltage for switches energized directly from the low voltage mains***			
	Nominal voltage of the supply system based on	Voltage line to neutral derived from	U_{imp} [2) 3)] (kV) Overvoltage category	

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Clause	Requirement + Test	Result - Remark	Verdict

	IEC 60038 [1] (V) Three phase Single phase		nominal voltages a.c. or d.c. up to including (V)	I	II	III	
			250		2,5		P

Annex M	**Impulse voltage test** (normative) To verify that clearances will withstand specified transient overvoltage.	N/A

Annex N	**Altitude correction factors** (normative) Dimensions given in table 22 are valid for altitudes ≤ 2000 m above sea level, clearances for altitudes above 2000 m sea level is multiplied by the altitude correction factor specified as follows:	N/A

Annex P	**Types of coatings for rigid printed board assemblies** (normative) **Type A coating:**	N/A

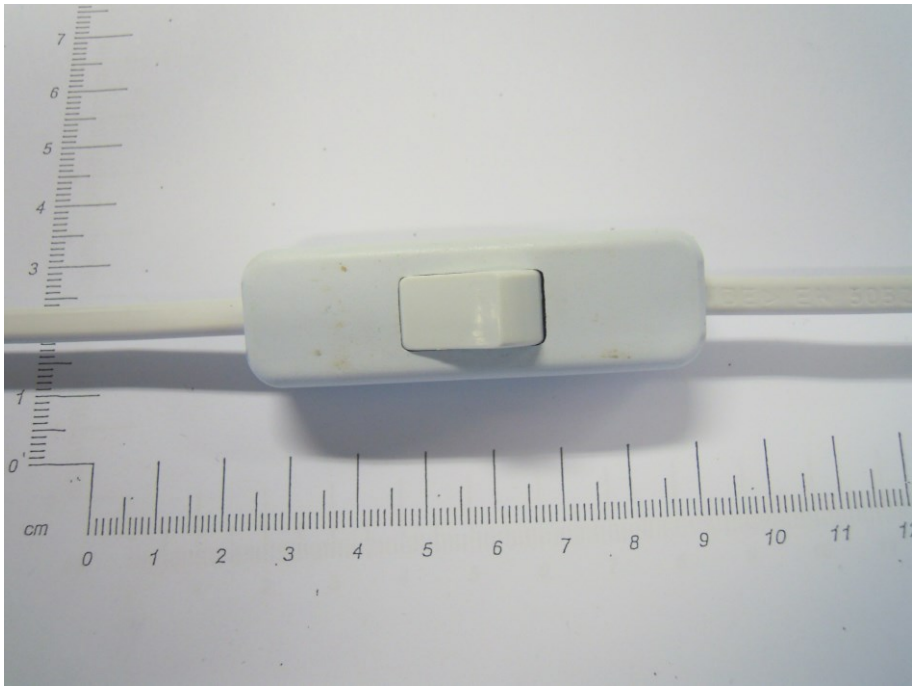
Annex U U.1	**Dimensions of tabs forming part of a switch** (*normative*) Tabs forming part of a switch complies with the dimensions according to Figure U.1.	N/A

Annex V	**Requirements and tests for resistance to abnormal heat for unattended appliances** (*informative*)	N/A

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Manufacturer Testing Laboratory according to CTF stage 1 or CTF stage 2 procedure has been used.
Note: This page may be removed when CTF stage 1 CTF stage 2 are not used. See also clause 4.8 in OD 2020 for more details.

Measurement/Testing	Testing /measuring equipment/ material used, (Equipment ID)	Last calibration date	Calibration due date
Insulation resistance	Insulation resistance meter S-00390	03/18	03/19
Heating / Endurance	Amperometric clamp S-04697	02/18	02/19
Heating / Endurance	Multimeter S-03423	09/17	09/18
Heating / Endurance	Thermometer S-4651	05/18	05/19
Dimension	caliper S-04319	10/17	10/18
Resistance to heat and fire	digital stopwatch S-03031	03/18	03/19
Resistance to heat and fire	Glow wire P-02172	05/18	05/19
Resistance to heat and fire	Thermocouple Type K S-07554	04/18	04/19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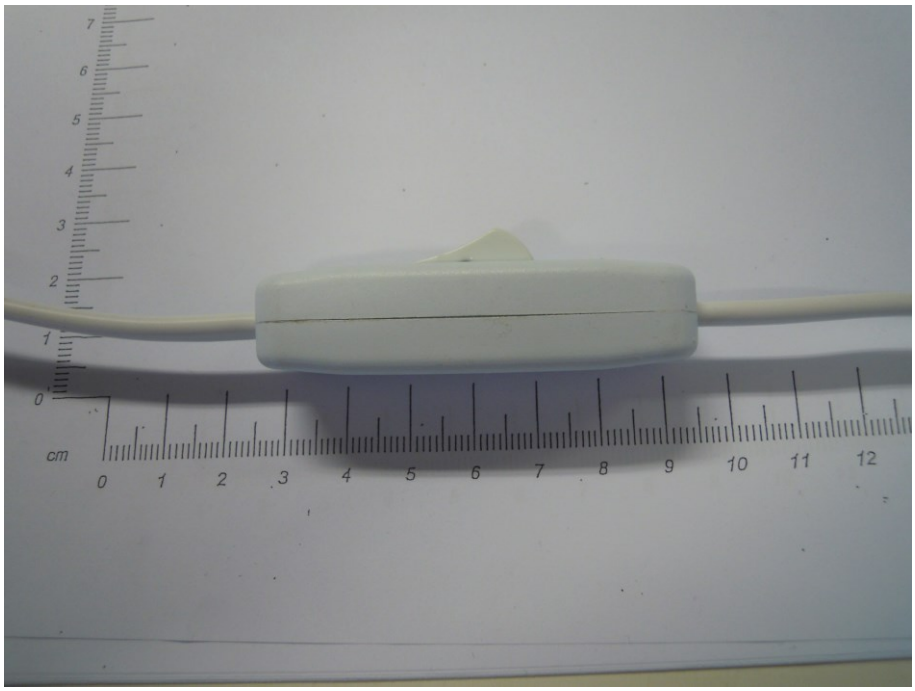
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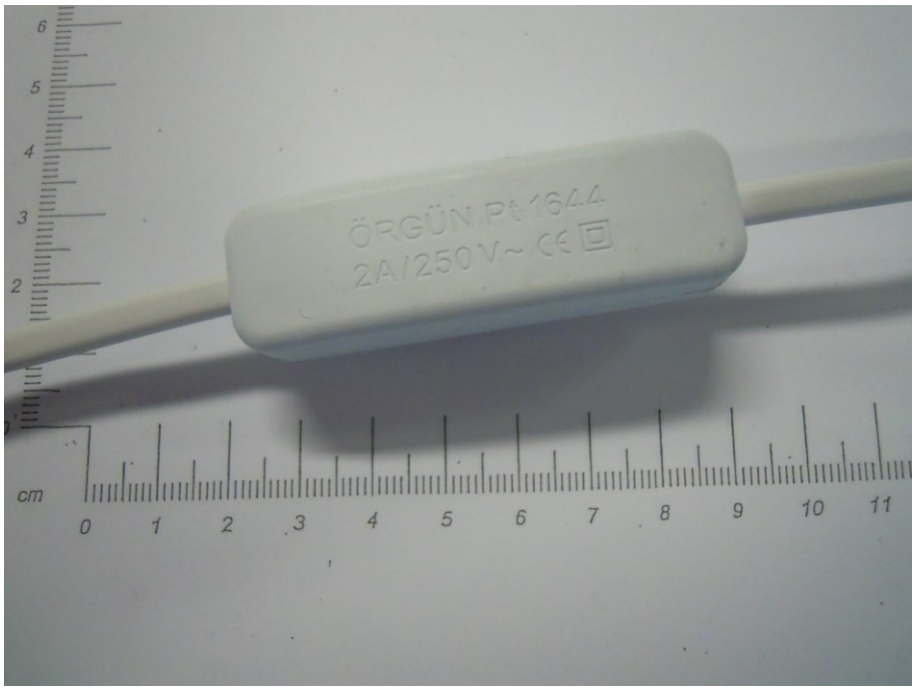
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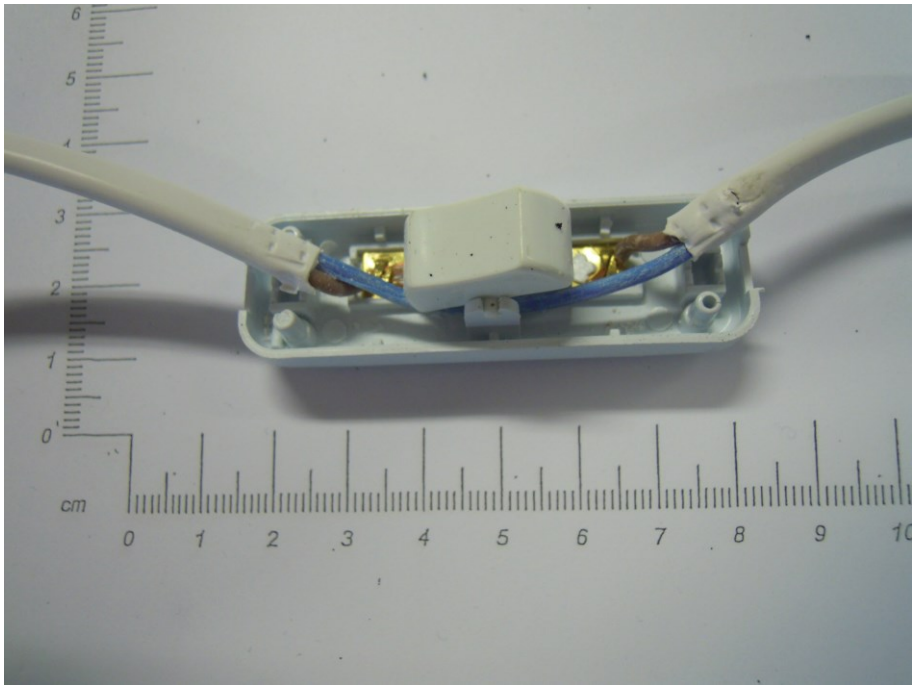
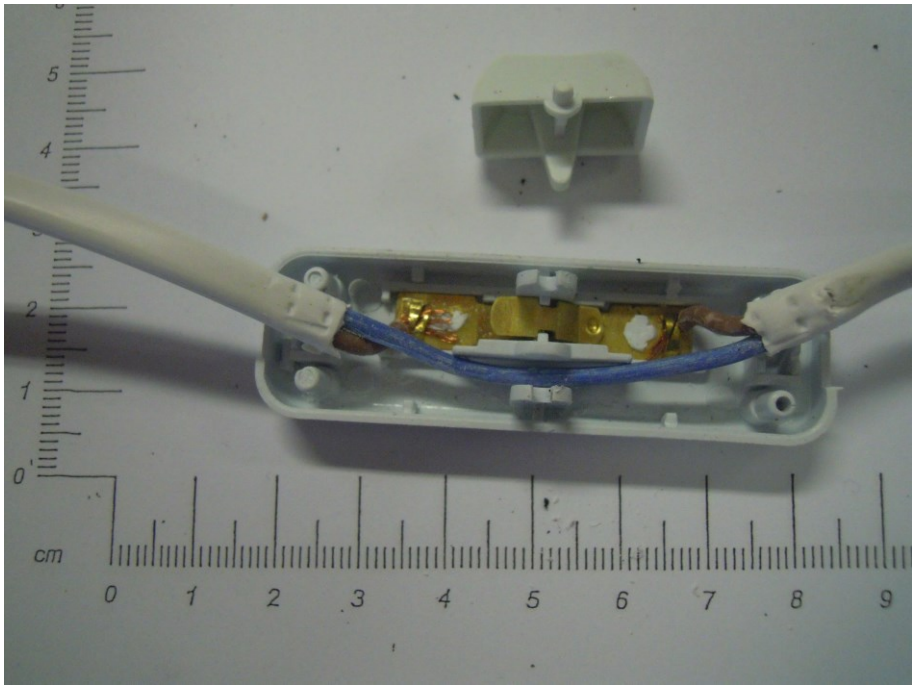
2A/250 V~

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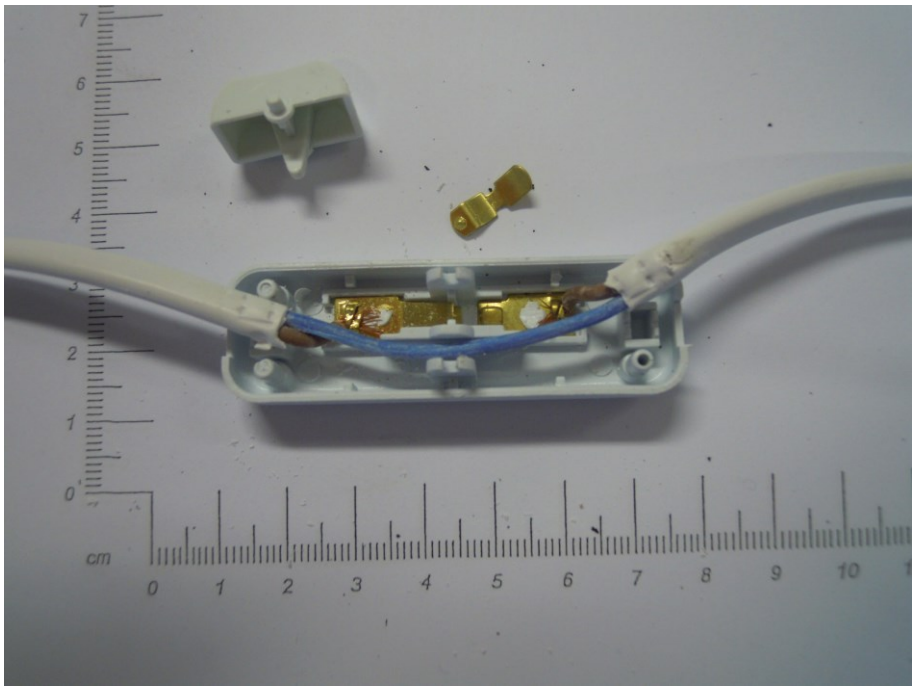
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